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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,648	01/05/2001	Bodo Furchheim	7054-101XX	1304
62836 7590 03/27/2007 BERLINER & ASSOCIATES 555 WEST FIFTH STREET 31ST STREET LOS ANGELES, CA 90013			EXAMINER KIM, CHONG HWA	
			ART UNIT 2167	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/27/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/674,648

Applicant(s)

FURCHHEIM ET AL.

Examiner

Chong H. Kim

Art Unit

2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☒ Claim(s) 4/2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on Feb 9, 2007 has been entered.

Claim Objections

2. Claim 4/2 objected to because of the following informalities: Claim 4 in a multiple dependent form depends from claim 2 that has been canceled. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, U.S. Patent 4,660,269 in view of Jordan, U.S. Patent 4,382,390.

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Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps; placing bearer rings in correspondence with prospective locations of hollow cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance, in a separate method; placing the tube and the bearer rings in a high internal pressure forming tool 20; applying axial forces to the ends of the tube; applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube; upsetting regions 7 and 8 that lie at the end of the tube outside the regions in which the cams are seated so as to be increased in thickness for forming different functional elements 4 and 5; characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size; characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube; characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool; characterized in that the ends of the tube comprise bearing faces, drive and/or control elements 4 and internal and/or external screw threads; characterized in that the bearer rings consist of sintered metal (col. 3, line 24); characterized in that at least one radially extending groove (the groove inherently formed in a hole with a hexagonal shape in cross section; see col. 3, lines 22-31 and ref. No. 14) is produced in the bearer ring and the drive and control elements; characterized by additional

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drive and control elements, preferably sprocket or gear wheels, secured by the internal high pressure forming method; characterized in that the side, facing the tube of the bearer ring has chamfers on both sides on the side facing the tube; and characterized in that the bearer rings are hardened prior to application on the formed cams; but fails to show the bearer rings having equal radial thickness completely around the tube.

Jordan teaches, in Figs. 1 and 2, a cam shaft, characterized in that the cam shaft is produced from a tube by the internal high pressure forming method comprising regions 7 of the tube defining hollow cams in form and in position in a single piece, and on the formed cams a bearer rings 2 shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner, each of the bearer rings having an outer surface and an inner surface, the radial thickness between the outer and inner surface being equal completely around the cam.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shape of the bearer ring of Suzuki with the equal radial thickness as taught by Jordan in order to reduce weight and cost as described by Jordan, in col. 1, lines 27-30 and 53-56.

5. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki, U.S. Patent 4,660,269 in view of Dawson, IPN WO 88/00643.

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps; placing bearer rings in correspondence with prospective locations of hollow cams on the cam

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shaft, the bearer rings having an even wall thickness (in a cross sectional view in the axial direction) and the necessary hardness, strength, and wear resistance, in a separate method; placing the tube and the bearer rings in a high internal pressure forming tool 20; applying axial forces to the ends of the tube; applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined regions to form the hollow cams from the material of the tube and whereby the bearer rings are attached to the hollow tube cams in a frictional and interlocking manner by expansion of the tube; upsetting regions 7 and 8 that lie at the end of the tube outside the regions in which the cams are seated so as to be increased in thickness for forming different functional elements 4 and 5; characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size; characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube; characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool; characterized in that the ends of the tube comprise bearing faces, drive and/or control elements 4 and internal and/or external screw threads; characterized in that the bearer rings consist of sintered metal (col. 3, line 24); characterized in that at least one radially extending groove (the groove inherently formed in a hole with a hexagonal shape in cross section; see col. 3, lines 22-31 and ref. No. 14) is produced in the bearer ring and the drive and control elements; characterized by additional drive and control elements, preferably sprocket or gear wheels, secured by the internal high pressure forming method; characterized in that the side, facing the tube of the bearer ring has chamfers on both sides on the side facing the tube; and characterized in that the bearer rings are

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hardened prior to application on the formed cams; but fails to show the bearer rings having equal radial thickness completely around the tube.

Dawson shows, in Figs. 1-8, a cam shaft, characterized in that the cam shaft is produced from a tube 10 by the internal high pressure forming method comprising regions 24 of the tube defining hollow cams in form and in position in a single piece, and on the formed cams a bearer rings 12 shaped to correspond to the cam periphery and made of a hard, wear-resistant material is secured frictionally and in an interlocking manner, each of the bearer rings having an outer surface and an inner surface, the radial thickness between the outer and inner surface being equal completely around the cam.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the shape of the bearer ring of Suzuki with the equal radial thickness as taught by Dawson in order to reduce weight and cost as described by Dawson, on page 13, lines 21-26.

Response to Arguments

6. Applicant's arguments with respect to rejections under 35 USC 102(b) have been considered but are moot in view of the new ground(s) of rejection.

7. In response to the applicant's argument that Neither Jordan, Suzuki, nor Dawson discloses a method to provide additional compression to the ends of the tube in order to compensate for the hydraulic pressure applied to the tube, it is discussed above in the rejection and as recited in claim 1, Suzuki applies axial forces to the ends of the tube as described in col. 4, lines 6-12. Claims do not recite that the axial forces are applied in order to provide additional

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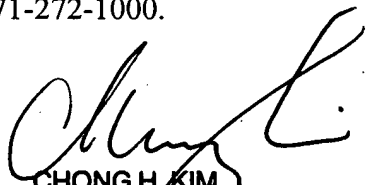
compression to the shaft or to compensate for the hydraulic pressure applied to the tube. Even if such recitation is present in the claims, it is the Examiner's view that such additional compression or compensation is shown by Suzuki. Although the axial forces by Suzuki are applied to compensate for the hydraulic pressure, such axial forces also act to compress the axial ends of the shaft and compensate for the hydraulic pressure applied to the tube.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chong H. Kim whose telephone number is (571) 272-7108. The examiner can normally be reached on Monday - Friday; 9:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

chk
March 22, 2007


CHONG H. KIM
PRIMARY EXAMINER